**CL2005 – Database Systems Lab**

**Lab - 4**

**Instructor:** Amna Waheed **Email:** amna.waheed@nu.edu.pk

**Sections:** BSCS 5F **Due** **Date &** 9-September-2024,

**Time:** 11:40 AM

**Lab Topic: Entity Relationship Diagram**

**Instructions**

1. First draw ERD on paper then draw them on MS Visio Tool.
2. Copy ERD from Visio and paste it on word file.
3. Submit the word file on Google Classroom and return the paper drawing to your instructor.
4. Individual lab tasks
5. Deadline = = 9 Sept,2024till 11:40 am.
6. You are required to do the complete lab tasks by using MS Visio Tool

**Case Study: 1**

The university database stores details about university students, courses, the semester a student took a particular course (and his mark and grade if he completed it), and what degree program each student is enrolled in. The database is a long way from one that’d be suitable for a large tertiary institution, but it does illustrate relationships that are interesting to query, and it’s easy to relate to when you’re learning SQL.

Consider the following requirements list:

1. The university offers one or more programs.
2. A program is made up of one or more courses.
3. A student must enroll in a program.
4. A student takes the courses that are part of her program.
5. A program has a name, a program identifier, the total credit points required to graduate, and the year it commenced.
6. A course has a name, a course identifier, a credit point value, and the year it commenced.
7. Students have one or more given names, a surname, a student identifier, a date of birth, and the year they first enrolled. We can treat all given names as a single object—for example, “Mark Zuckerberg.”
8. When a student takes a course, the year and semester he attempted it are recorded. When he finishes the course, a grade (such as A or B) and a mark (such as 60 percent) are recorded.
9. Each course in a program is sequenced into a year (for example, year 1) and a semester (for example, semester 1).

**Case Study: 2**

Emerging Electric wishes to create a database with the following entities and attributes:

1. Customer, with attributes Customer ID, Name, Address (Street, City, State, Zip Code), and Telephone.
2. Location, with attributes Location ID, Address (Street, City, State, Zip Code), and Type (values of Business or Residential).
3. Rate, with attributes Rate Class and RatePerKWH After interviews with the owners, you have come up with the following business rules:
   1. Customers can have one or more locations.
   2. Each location can have one or more rates, depending on the time of day.

Draw an ERD for this situation and place minimum and maximum cardinalities on the diagram. State any assumptions that you have made while assigning cardinalities.

